Testicular Microlithiasis: Ultra Sound Appearance

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Testicular microlithiasis is a diffuse, benign condition involving both testicles without architectural distortion. Multiple, bright echoes are present on ultrasound examination which rarely cause shadowing. Many associated conditions have been reported in patients with this entity. As this is a benign entity, knowledge of its appearance and associated conditions to prevent unnecessary surgery is important.

Introduction

The testicles are excellent transmitters of ultrasound waves and are easily evaluated by using 7.5 MHz or 10 MHz transducers. The echogenicity of the testicles is composed of homogeneous medium-level echoes quite similar to those seen in the thyroid gland. Frequently a linear area of high signal is seen posteriorly representing the mediastinum testis. The mediastinum testis is composed of thickened connective tissue containing the arteries and veins supplying the testis and blends in with the tunica vaginalis.

The normal testicle is elliptical in shape, measures approximately 3.5cm in length and 3cm in diameter. Evaluation of both size and shape of each testicle as well as internal echo characteristics is paramount in diagnosing pathology.

Calcification within the testicle is usually a sign of neoplasm, trauma, infection or a vascular abnormality. A rare entity, testicular micolithiasis also may cause diffuse calcifications in the testes.

A study by Vegni-Talluri et al evaluated testicular microlithiasis by both light and electron microscopy and concluded that these tiny calcifications represented degenerating intratubular cells in the seminiferous tubules[1]. The calcifications were surrounded by a laminated shell composed of cytoplasmic debris and collagen fibers.

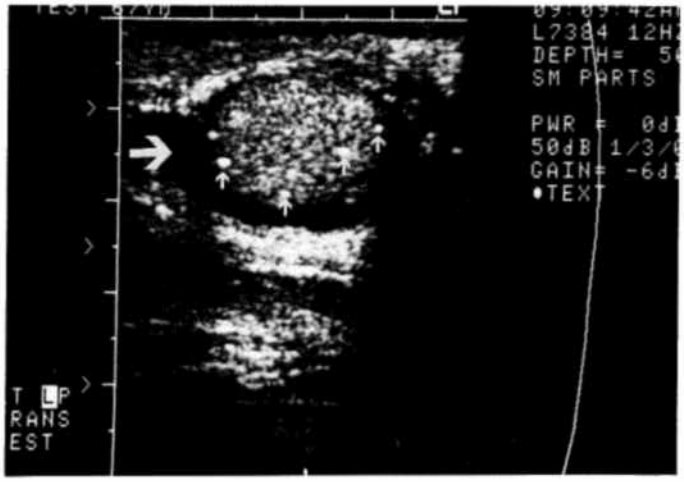
Patients with testicular microlithiasis can be completely asymptomatic and have no prior history of trauma, infection or vascular insult[2]. Studies have shown an association between testicular microlithiasis and cryptorchidism[3], with Klinefelter's syndrome[4], male pseudohermaphroditism[5], neoplasm[1], and in a patient with both pulmonary alveolar microlithiasis and sympathetic nervous system calcification[6].

Interestingly, both patients had associated hydroceles, an association that previously has not been reported with testicular microlithiasis.

Figures 1 and 2 are of a patient who was noted to have a swollen testicle during a physical examination. Ultrasound revealed small peritesticular fluid collection consistent with a hydrocele, together with multiple small punctate hyperechoic lesions diffusely present throughout the testicle. There was no distortion to the testicular parenchyma in this patient; his past medical history was noncontributory. Acoustic shadowing was absent and the process was bilateral.

The other patient presented with an enlarging left testicle with chronic dull aching pain. There were no clinical or lab-

Figures 1&2: Longitudinal and transverse scans demonstrate a homogeneous left testicle with multiple, small, bright internal foci without acoustic shadowing (small white arrows). The surrounding anechonic fluid collection seen in both projections represents a hydrocele (large white arrows). No overlying skin thickening is noted.



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oratory findings suggestive of infection; a history of trauma also was absent.

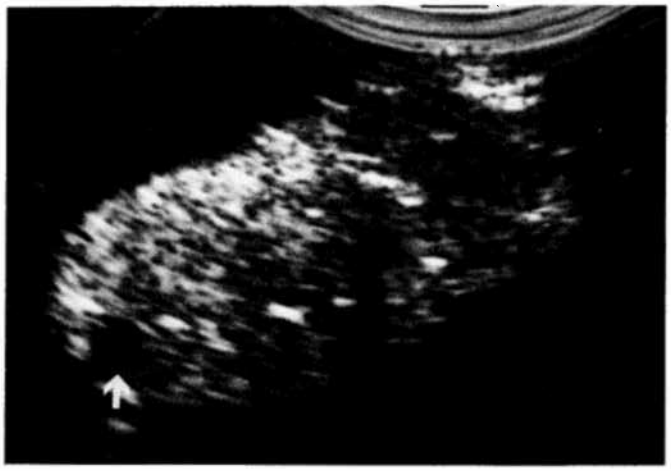
Ultrasound revealed large anechoic peritesticular fluid collection (Figs 3 & 4), along with multiple nonshadowing punctate echodensities spread diffusely throughout the left testicle. In addition, an abnormal inhomogeneous echotexture was noticed. Scanning through the right testicle demonstrated diffuse echogenic foci without architectural distortion or homogeneous echotexture.

At resection a large left hydrocele was present along with testicular microlithiasis and a lobulated embryonal-cell carcinoma.

Mammographic examination of the resected testicle revealed multiple punctate calcifications with an appearance similar to degenerative breast disease or sclerosing adenosis (Fig. 5).

Testicular microlithiasis usually presents as multiple, tiny, bright echoes, usually without acoustic shadowing. There should be no apparent distortion of the parenchyma; however, the microlithiasic specks may be so numerous that attenuation of the sound beam may limit evaluation of the deep structures within the testicle. Normal testicles on ultrasound are homogeneous and any abnormality requires an explanation. Most of the abnormalities clinicians look for are neoplastic, and thus surgery follows. If tiny, punctuate, bright echoes are diffusely present without any architectural distortion; the diagnosis of testicular microlithiasis is made. If unsure a follow-up scan in 4 to 6 months can be obtained to assure stability but surgery is not indicated just for microlithiasis.

The statement "surgical intervention is not needed" is an important take-home message regarding this entity. As more and more clinicians are performing sonography in their offices, this diagnosis is an important one.



Figures 3&4: Two longitudinal views of the left testicle demonstrate an inhomogeneous internal architecture (arrows) that represent the patient's embryonal cell carcinoma as well as multiple punctuate bright foci without acoustic shadowing secondary to microlithiasis. The black region surrounding the testicle represents the patient's large hydrocele.

Figure 5: Mammographic evaluation of the bivalved left testicle, figures 3 and 4, demonstrates multiple punctuate radiodensities consistent with microlithiasis.

ACKNOWLEDGEMENT:

The authors are grateful for Ms. Karen H. Akagi's preparation of the manuscript.

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